

What is claimed is:

1. A constant velocity universal joint comprising an outer joint member including a bowl-shaped mouth portion and a stem portion with a serration formed on an outer peripheral surface thereof, the stem portion extending from a bottom portion of the mouth portion in an axial direction, wherein an induction hardened area is formed in the bottom portion of the mouth portion of said outer joint member.
2. A constant velocity universal joint according to claim 1, wherein an induction hardened area is formed in a base portion of said stem portion, and an unhardened area is remained between the induction hardened area in said base portion and that in the bottom portion of said mouth portion.
3. A constant velocity universal joint according to claim 2, wherein the induction hardened area in the base portion of said stem portion is formed after the induction hardened area in the bottom portion of the mouth portion is formed.
4. A constant velocity universal joint according to claim 1, wherein the induction hardened area in the bottom portion of said mouth portion is formed at the same time when an induction hardened area in a track portion formed on an inner peripheral surface of the outer joint member is formed.
5. A constant velocity universal joint according to claim 2, wherein the induction hardened area in the bottom portion of said mouth portion is formed at the same time when an induction hardened area in a track portion formed on an inner peripheral surface of the outer joint member is formed.
6. A constant velocity universal joint according to claim 3, wherein the induction hardened area in the bottom portion of said mouth portion is formed at the same time when an induction hardened area in a track portion formed on an inner peripheral surface of the outer joint

member is formed.

7. A constant velocity universal joint comprising an outer joint member including a bowl-shaped mouth portion and a stem portion with a serration formed on an outer peripheral surface thereof, the stem portion extending from a bottom portion of the mouth portion in an axial direction, an outside diameter of a shoulder portion formed on an outer periphery of the bottom portion of the mouth portion being equal to or greater than twice of an outside diameter of the serration of the stem portion, wherein

a depth of an induction hardened area in a base portion of the stem portion is set to 3 mm or less.

8. A wheel bearing device comprising:

a constant velocity universal joint according to claim 1;

an outer member having double rows of outer races on an inner periphery thereof;

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

9. A wheel bearing device comprising:

a constant velocity universal joint according to claim 2;

an outer member having double rows of outer races on an inner periphery thereof;

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

10. A wheel bearing device comprising:

a constant velocity universal joint according to claim 3;

an outer member having double rows of outer races on an inner periphery thereof;

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

11. A wheel bearing device comprising:

a constant velocity universal joint according to claim 4;

an outer member having double rows of outer races on an inner periphery thereof;

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

12. A wheel bearing device comprising:

a constant velocity universal joint according to claim 5;

an outer member having double rows of outer races on an inner periphery thereof;

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

13. A wheel bearing device comprising:

a constant velocity universal joint according to claim 6;

an outer member having double rows of outer races on an inner periphery thereof,

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.

14. A wheel bearing device comprising:

a constant velocity universal joint according to claim 7;

an outer member having double rows of outer races on an inner periphery thereof,

an inner member having double rows of inner races to face said outer races,

respectively; and

double rows of rollers incorporated in between the races of said outer member and said inner member, wherein

the constant velocity universal joint is inserted into and fitted with said inner member via the serration.